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**PATENT**  
Attorney Docket No.: 016838-000330US

Assistant Commissioner for Patents  
Washington, D.C. 20231

On June 21, 2001

TOWNSEND and TOWNSEND and CREW LLP

By: Connie Larson

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

Garold M. Muth

Application No.:

Filed:

For: PUMP SYSTEMS AND METHODS

Art Unit:

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Prior to examination of the above-referenced application, please enter the following amendment.

**IN THE CLAIMS:**

Please amend the claims as follows (all claims are set forth for convenient reference):

- 1        1. (Amended) A pumping system comprising:
  - 2              a pump barrel that is adapted to be placed into a well casing;
  - 3              a plunger reciprocatably positioned within the pump barrel, wherein the plunger
  - 4              has an open top end with a sharpened edge, a bottom end, and a traveling valve at the bottom
  - 5              end;

6           a connector coupled to the plunger below the top end, wherein the connector is  
7 configured to permit fluids to be moved upwardly through the connector and the plunger upon  
8 each downstroke of the plunger; and

9           a rod coupled to the connector, wherein the rod is translatable to reciprocate the  
10 plunger within the pump barrel using an upstroke and a downstroke, and wherein the top end  
11 of the plunger is adapted to direct particulate into the plunger and away from the pump barrel  
12 upon each upstroke.

1           2. (As filed) A system as in claim 1, wherein the top end of cylinder is  
2 inwardly tapered, and wherein the connector is disposed within the cylinder.

1           3. (As filed) A system as in claim 1, wherein the connector has at least one  
2 through hole to permit fluids to be moved upwardly through the connector and the plunger  
3 upon each downstroke of the plunger.

1           4. (As filed) A system as in claim 1, wherein the pump barrel has a bottom  
2 end and a standing valve in the bottom end.

1           5. (Amended) A method for pumping fluids from the ground, the method  
2 comprising:

3           placing a pumping system into the ground, wherein the pumping system  
4 comprises a pump barrel, a plunger reciprocatably positioned within the pump barrel, wherein  
5 the plunger has an open top end with a sharpened edge, a bottom end, and a traveling valve at  
6 the bottom end, and a connector coupled to the plunger below the top end; and

7           reciprocating the plunger within the pump barrel with an upstroke and a  
8 downstroke, and directing particulate into the plunger through the open top end and away from  
9 the pump barrel upon each upstroke with the sharpened edge.

1           6. (As filed) A method as in claim 5, wherein the plunger comprises a  
2 cylinder having an inwardly tapered open top end to direct particulate into the cylinder upon  
3 each upstroke.

1           7. (As filed) A method as in claim 5, wherein the plunger has a traveling  
2 valve at the bottom end, wherein the pump barrel has a standing valve at a bottom end such  
3 that fluids are drawn into the pump barrel through the standing valve upon each upstroke and  
4 are forced through the traveling valve upon each downstroke.

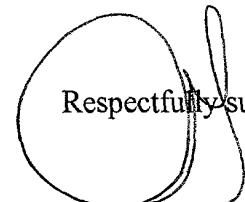
1               8. (As filed) A method as in claim 5, wherein the connector has a through  
2 hole such that fluids passing through the traveling valve move through the through hole and  
3 upwardly through the plunger.

1               9. (New) A pumping system comprising:  
2                a pump barrel that is adapted to be placed into a well casing;  
3                a plunger reciprocatably positioned within the pump barrel, wherein the plunger  
4 has an open top end that is configured to direct particulate away from the pump barrel, a  
5 bottom end, and a traveling valve at the bottom end, wherein the plunger has a tight fit with the  
6 pump barrel to prevent particulate from accumulating between the plunger and the pump  
7 barrel;  
8                a connector coupled to the plunger below the top end; and  
9                a rod coupled to the connector, wherein the rod is translatable to reciprocate the  
10 plunger within the pump barrel using an upstroke and a downstroke.

REMARKS

Claims 1 and 5 have been amended. Claims 9 has been added. Examination of the claims, as amended, is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,  
  
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**Marked-up Claims Pursuant to 37 CFR §1.121(c)**

1       1. (Amended) A pumping system comprising:  
2           a pump barrel that is adapted to be placed into a well casing;  
3           a plunger reciprocatably positioned within the pump barrel, wherein the plunger  
4 has an open top end with a sharpened edge, a bottom end, and a traveling valve at the bottom  
5 end;

6           a connector coupled to the plunger below the top end, wherein the connector is  
7 configured to permit fluids to be moved upwardly through the connector and the plunger upon  
8 each downstroke of the plunger, and wherein the plunger has an interior that is generally open  
9 from the top end to the connector; and

10          a rod coupled to the connector, wherein the rod is translatable to reciprocate the  
11 plunger within the pump barrel using an upstroke and a downstroke, and wherein the top end  
12 of the plunger is adapted to direct particulate into the plunger and away from the pump barrel  
13 upon each upstroke, and wherein the generally open interior permits fluids passing through the  
14 connector to travel up through the plunger and out the open top end to expel particulate from  
15 the plunger upon each downstroke so that essentially no particulate accumulates on the  
16 connector.

1       2. (As filed) A system as in claim 1, wherein the top end of cylinder is  
2 inwardly tapered, and wherein the connector is disposed within the cylinder.

1       3. (As filed) A system as in claim 1, wherein the connector has at least one  
2 through hole to permit fluids to be moved upwardly through the connector and the plunger  
3 upon each downstroke of the plunger.

1       4. (As filed) A system as in claim 1, wherein the pump barrel has a bottom  
2 end and a standing valve in the bottom end.

1       5. (Amended) A method for pumping fluids from the ground, the method  
2 comprising:

3           placing a pumping system into the ground, wherein the pumping system  
4 comprises a pump barrel, a plunger reciprocatably positioned within the pump barrel, wherein  
5 the plunger has an open top end with a sharpened edge, a bottom end, and a traveling valve at

6 the bottom end, and a connector coupled to the plunger below the top end, wherein the plunger  
7 has an interior that is generally open from the top end to the connector; and

8 reciprocating the plunger within the pump barrel with an upstroke and a  
9 downstroke, and directing particulate into the plunger through the open top end and away from  
10 the pump barrel upon each upstroke and expelling particulate from the open top end of the  
11 plunger using fluids passing upwardly through the connector and the pump barrel upon each  
12 downstroke so that essentially no particulate accumulates on the connector.

1 6. (As filed) A method as in claim 5, wherein the plunger comprises a  
2 cylinder having an inwardly tapered open top end to direct particulate into the cylinder upon  
3 each upstroke.

1 7. (As filed) A method as in claim 5, wherein the plunger has a traveling  
2 valve at the bottom end, wherein the pump barrel has a standing valve at a bottom end such  
3 that fluids are drawn into the pump barrel through the standing valve upon each upstroke and  
4 are forced through the traveling valve upon each downstroke.

1 8. (As filed) A method as in claim 5, wherein the connector has a through  
2 hole such that fluids passing through the traveling valve move through the through hole and  
3 upwardly through the plunger.

1 Please add new claim 9 as follows:

--9. A pumping system comprising:

a pump barrel that is adapted to be placed into a well casing;

a plunger reciprocatably positioned within the pump barrel, wherein the plunger  
has an open top end with a sharpened edge, a bottom end, and a traveling valve at the bottom  
end, wherein the plunger has a tight fit with the pump barrel to prevent particulate from  
accumulating between the plunger and the pump barrel;

a connector coupled to the plunger below the top end, wherein the connector is  
configured to permit fluids to be moved upwardly through the connector and the plunger upon  
each downstroke of the plunger, and wherein the plunger has an interior that is generally open  
from the top end to the connector; and

a rod coupled to the connector, wherein the rod is translatable to reciprocate the  
plunger within the pump barrel using an upstroke and a downstroke, and wherein the top end  
of the plunger is adapted to direct particulate into the plunger and away from the pump barrel

upon each upstroke, and wherein the generally open interior permits fluids passing through the connector to travel up through the plunger and out the open top end to expel particulate from the plunger upon each downstroke so that essentially no particulate accumulates on the connector.--